

### REMARKS

#### **Amendments:**

By this amendment, claim 1 has been amended to clearly distinguish over the cited references.

Claims 2, 3 and 16 have been cancelled, without prejudice.

Claim 11 has been amended to incorporate the subject matter of claim 16

A new claim 21 has been added to further define our invention, maintaining the number of claims in the application under twenty claims.

Various other claim amendments have been made to avoid redundancy and for clarification.

It is also noted that in Box 7 of the action, claims 16-19 are "objected to". Although not mentioned in the body of the action, it is assumed that the Examiner intended that these claims would be allowable if re-written in independent form, incorporating the subject matter of all intervening claims. On this basis, we have incorporated the subject matter of claim 16 into claim 11 and assume that amended claims 11 to 19 are otherwise allowable.

#### **Prior Art Rejections**

Claims 1, 2 and 7-10 have been rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative under 35 U.S.C. 103(a), as Obvious over Wendt et al. USP 6,551,960.

More specifically, the Examiner alleges that the reference teaches, especially at columns 4-6, nanosized alloy catalysts of Pt and Ru at 50:50 on a support.

By this amendment, claim 1 now specifies X as Ru, and a selected atomic percentage ratio of Pt:X of 70:30 to 80:20 as found in part in original claim 2 and in unrejected claim 5. Support for this range is found in our Specification e.g at page 8, line 20 and figure 2.

Since by the Examiner's own admission, the reference teaches 50:50 Pt:Ru, amended claim 1 is clearly novel over the disclosure thereof. In fact, a review of the entire reference disclosure fails to locate any other composition of Pt:Ru.

Accordingly, it is requested that this rejection be withdrawn.

Regarding the Obviousness issue, the Examiner acknowledges that the reference does not explicitly teach the claimed form, but no differences are seen, especially given the teaching of alloy catalysts and the similarity to the synthesis disclosed. It is noted that no attempt has been made by the Examiner to establish a prima facie case of Obviousness, or to provide any motivation to combine it with any other reference.

Moreover, as seen in figure 2, the now claimed catalyst alloy compositions provide superior CH<sub>3</sub>OH oxidation activities, which is neither taught nor suggested in the reference.

Further, the specification at page 8, lines 19-24, and figure 2 also supports the particle sizes as claimed in claims 5 and 20.

Yet further, claims 4, 6 and 20 specify a mixed catalyst phase comprising a PtRu alloy phase of 85:15 Pt:Ru atomic percentage ratio, a Pt phase and an Ru phase, which is neither taught nor suggested in the reference.

Accordingly, it is submitted that this Obviousness issue be withdrawn.

Claims 1-15 and 20 also stand rejected under 35 U.S.C. 102(e), as anticipated by, or in the alternative under 35 U.S.C. 103(a), as obvious over Laine et al. USP 6,551,960.

The Examiner alleges that the reference teaches in columns 2-4 and 8 equimolar Pt and Ru on a support, with nanosized metal clusters, and a similar synthesis using ethylene glycol and heating.

First, we can find no specific disclosure of equimolar Pt and Ru. The PtRu composition is consistently disclosed in the reference in terms of ranges.

In fact, a wide range of ratios of Pt :Ru and particle sizes are disclosed most of which is not enabled. It is also noted that the composition ranges disclosed are not restricted to those having a major amount of Pt and a minor amount of Ru, which is a characteristic of our claimed composition, ie. Pt:Ru of 70:30 to 80:20. See column 2, lines 61-63. Further, at column 3, lines 61-62, particle size ranges of less than 0.05 up to 1  $\mu\text{m}$  are disclosed. The Examiner will appreciate that these particle size ranges are orders of magnitude larger than our claimed particle sizes. For example, 1  $\mu\text{m}$  = 1000  $\mu\text{m}$  and 0.05  $\mu\text{m}$  = 50  $\mu\text{m}$ .

Further, there is no teaching or suggestion in this reference of the use of the mixed phase catalyst as recited in claims 4, 6 and 20.

Accordingly, it is submitted that the product-type claims 1 and 5-10 are clearly novel for the reasons stated above, and further that product-type claims 4, 6 and 20, which contain the feature of the mixed phase catalyst comprising a PtRu alloy phase of 85:15 Pt:Ru atomic percentage ratio, a Pt phase and an Ru phase, which is neither taught nor suggested in the reference, should also be patentable on this basis.

Yet further, it is submitted that the Examiner has neither established a prima facie case of Obviousness, nor made any attempt to establish any motivation in the reference to combine it with any other reference, which is required to establish such a case.

With regard to the process-type claims 11-19, as mentioned above, the subject matter of claim 16 has now been included in claim 11. In the absence of any rejection of claims 16-19, and the indication in box 7 that these claims are objected to, as mentioned above, it is assumed that the Examiner intended to indicate the allowability of these claims, if re-written in independent form.

Accordingly, it is requested that the prior art issues based upon Laine et al. be withdrawn.